

IN THE CLAIMS:

1. A system for directional drilling within a wellbore, comprising:

5 a drill string comprising an upper portion, a lower portion, a bent motor coupled to the lower portion, and a drill bit coupled to bent motor; and

10 a clutch assembly disposed between the upper and lower portions, the clutch assembly operable to disengage the upper and lower portions of the drill string such that the upper portion may be rotated without rotating the lower portion.

2. The system of Claim 1, wherein a length of the lower portion is at least 1000 feet.

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3. The system of Claim 1, wherein a weight of the lower portion is at least 10,000 pounds.

4. The system of Claim 1, wherein the clutch assembly comprises:

a housing rotatably coupled to the upper portion and the lower portion;

5 a piston having a passageway formed therein, the piston comprising a plurality of spline teeth that align with respective ones of a first set of channels formed in an inner wall of the upper portion and with respective ones of a second set of channels formed in an inner wall  
10 of the lower portion;

a biasing member associated with the lower portion and exerting a longitudinal force on the piston in the direction of the upper portion; and

wherein the spline teeth of the piston are  
15 selectively engageable with the first set of channels to rotatably couple the upper portion with the lower portion.

5. The system of Claim 4, wherein the piston is  
20 isolated in an oil bath.

6. The system of Claim 4, further comprising a fluid pump operable to control an amount of a fluid pumped through the drill string so as to control the  
25 longitudinal position of the piston and the engagement of the spline teeth of the piston with the first set of channels.

7. The system of Claim 1, wherein the clutch assembly comprises:

a housing coupled to the upper portion;

one or more flanges associated with an upper end of  
5 the lower portion, the flanges rotatably disposed within  
respective channels formed in the inside wall of the  
housing;

one or more pistons each laterally disposed within  
an associated chamber formed in a wall of the housing;

10 a biasing member disposed within each chamber and  
exerting an inward force on the associated piston; and

wherein each piston is selectively engageable with  
an aperture formed in a wall of the lower portion to  
rotatably couple the upper portion with the lower  
15 portion.

8. The system of Claim 7, wherein the housing is  
formed integral with the lower end of the upper portion.

20 9. The system of Claim 7, further comprising a  
passageway coupling the chamber to an outside surface of  
the housing.

10. The system of Claim 7, wherein the one or more  
25 pistons comprises a plurality of pistons existing at  
different longitudinal and radial positions with respect  
to the housing.

11. The system of Claim 7, further comprising a fluid pump operable to control an amount of a fluid pumped through the drill string so as to control the lateral position of the one or more pistons.

12. A system for directional drilling within a wellbore, comprising:

5 a drill string comprises an upper portion, a lower portion, a bent motor coupled to the lower portion, and a drill bit coupled to bent motor; and

10 a ratchet assembly disposed between the upper and lower portions, the ratchet assembly operable to rotationally disengage the upper and lower portions of the drill string and allow the upper portion to rotate while the lower portion does not rotate.

13. The system of Claim 12, wherein a length of the lower portion is at least 1000 feet.

15 14. The system of Claim 12, wherein a weight of the lower portion is at least 10,000 pounds.

15. The system of Claim 12, wherein the ratchet assembly comprises:

a housing rotatably coupled to the upper portion and the lower portion;

5 a first set of teeth associated with the upper portion;

a piston having a second set of teeth associated with the lower portion;

10 a biasing member associated with the lower portion and exerting a longitudinal force on the piston in the direction of the upper portion; and

15 wherein the first and second set of teeth are selectively engageable to allow the lower portion to rotate when the upper portion rotates in a first rotational direction and to allow the upper portion to rotate in a second rotational direction opposite the first rotational direction without rotating the lower portion.

16. A method for directional drilling within a wellbore, comprising:

flowing a fluid through a drill string disposed in a wellbore at a first velocity;

5 rotating a drill bit within the wellbore;

rotating an upper portion and a lower portion of the drill string in a first rotational direction;

10 flowing the fluid through the drill string at a second velocity greater than the first velocity, thereby disengaging the upper and lower portions of the drill string such that the upper portion rotates without rotating the lower portion; and

continuing to rotate the drill bit to alter the direction of the wellbore.

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17. The method of Claim 16, wherein the first velocity is approximately 150 gallons per minute.

18. The method of Claim 16, wherein the second  
20 velocity is greater than approximately 150 gallons per minute.

19. The method of Claim 16, wherein a length of the lower portion is at least 1000 feet.

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20. The method of Claim 16, wherein the weight of the lower portion is 10,000.

21. The method of Claim 16, wherein disengaging the upper and lower portions of the drill string comprises translating a piston into the lower portion.

5        22. The method of Claim 21, further comprising isolating the piston in an oil bath.

23. The method of Claim 16, wherein disengaging the upper and lower portions of the drill string comprises  
10 translating a piston into a housing associated with the upper portion.



24. A method for directional drilling within a wellbore, comprising:

rotating a drill bit within the wellbore;

rotating an upper portion and a lower portion of the  
5 drill string in a first rotational direction;

rotating the upper portion of the drill string in a second rotational direction opposite the first rotational direction, thereby rotationally disengaging the upper and lower portions of the drill string such that the upper  
10 portion rotates without rotating the lower portion; and

continuing to rotate the drill bit to alter the direction of the wellbore.

25. The method of Claim 24, wherein a length of the  
15 lower portion is at least 1000 feet.

26. The method of Claim 24, wherein a weight of the lower portion is at least 10,000 pounds.

27. A method for reducing friction while drilling a well system, comprising:

coupling a drill bit to a drill string;

coupling a friction-reducing apparatus to the drill  
5 string;

drilling an articulated wellbore using the drill bit, drill string, and friction-reducing apparatus; and

drilling one or more lateral wellbores from the articulated wellbore using the drill bit, drill string,  
10 and friction-reducing apparatus.